

Understanding the Vendor Logical Data Model

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Introduction

The Department of General Services (DGS) and the Department of Accounts (DOA) in conjunction with the Virginia Information Technology Agency (VITA) have created a logical model to represent vendor related data.

This logical model details the data which DGS, DOA and VITA believe is needed to robustly describe a vendor that does business with the Commonwealth of Virginia. By robust, we mean the model intends to represent every data element that is currently needed by the COV to track and manage vendors. It is robust but not exhaustive; there may be other data related to vendors that may be added in the future. The model is limited specifically to data related to vendors. It does not include the data needed to manage the entire procure-to-pay business cycle (e.g., purchase orders, invoices, and payments).

The model should guide system acquisition and design decisions. If a package will not support the logical features of this model, then the package should be rated lower for that reason. Any in-house developed systems should be consistent with the model. Consistency does not mean that every data element in the model must exist in the system; however, the data elements that do exist must conform to the business logic represented by the model.

What the model does and does not intend to say

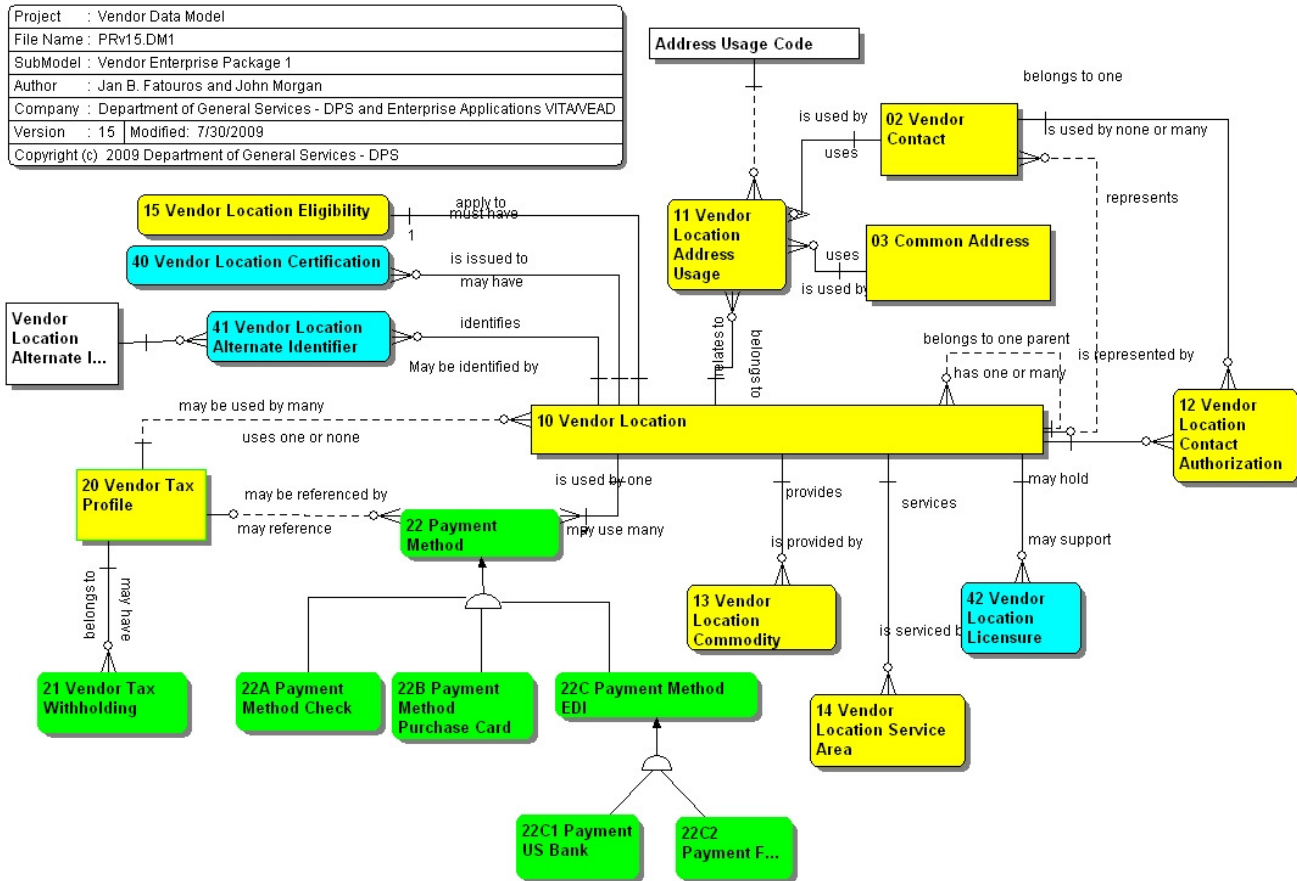
The model states that based upon extensive research and discussion, if a system is going to support all the data that the COV needs about a vendor, then it must include all of the data shown. The model as a standard does not say that every agency must fully support the model. The address entity contains attributes which are returned by address validation software. Many applications will not need them but they are included in the model for completeness.

When the model represents a relationship, it says that any system that intends to support the COV's needs must support the minimum complexity shown. It does not prohibit a system from creating general structures which support a superset of functionality.

Data element lengths and types should be considered strongly recommended – just short of binding. In some cases, using shorter or longer lengths will make the intended usage impossible by creating a situation where one system sends data which is longer than a receiving system can accept. The August 2009 release of this model will contain specific implementation comments about each entity and attribute. At that time, some specifics may be mandated and some specific liberties will be described.

The model is biased toward business clarity and does not mandate a specific physical implementation. For example, Vendor Location Eligibility shows a series of flags. The flags could easily be implemented in a general structure with each flag being represented by a row in a table. But in the logical model, a general structure would hide the business meaning of each flag. The flags could also be moved into Vendor Location: placing them in their own entity seems to more clearly express the business sense. Separate entities like Vendor Location Eligibility were created only when the modelers deemed it appropriate.

An Entity-Relationship Diagram of the Vendor Data Model



To find an interactive version of the model go to:
<http://www.cao.virginia.gov/EDM/Vendor/index.htm>

Vendor Location

The concept of a vendor location anchors all the other data. Vendors exist somewhere and the Commonwealth does business with vendors out of known locations. A small vendor may have only one location while larger vendors will have multiple locations.

The model allows locations to be linked in a parent-child relationship which allows one location to be designated as the headquarters. The model supports unlimited levels of hierarchy when linking locations.

What is a vendor?

A vendor is a business or person who provides goods or services. This definition implies multiple functions: solicitation, contracting, verifying receipt of goods or services, and making payment. Vendors involved in this process are known as Procurement Vendors.

In some COTS packages, any person or organization which receives payments is considered a vendor. This standard explicitly excludes payees who do not provide goods or services.

Vendor Identifiers and Alternate Identifiers

Each Vendor Location will be identified by a system generated number, the Virginia Vendor Location Identification Number (VLIN). Additionally, the model provides for alternate identifiers. For example, given the Cross Reference Domain Name “DUNS” and a Dun and Bradstreet number, an external system would be able to find vendor locations linked to that identifier. Other possible identifiers include the Central Contractor Registration number. Although the design would allow agency vendor IDs to be carried as alternate identifiers, it is expected that agencies will be required to modify their systems to carry the VLIN.

It is also expected that the vendor ID transmitted in enterprise messages will be the VLIN.

Vendor Contact

In the context of purchasing, the Commonwealth wants to be able to find and identify individuals as individuals and determine their relationships to vendors. Consequently, contacts are treated as a separate entity. Although rare cases may exist where one person simultaneously represents multiple companies, this model requires such a person to be entered once for each vendor.

A contact may be a person or a generic contact point such as “Purchasing Department” or “Customer Service.” Certain functions may require a person as the contact point. For example, the solicitation process may require that the formal solicitation go to a particular person by name and not a generic addressee. This requirement is recorded in Address Usage Code.

Vendor locations have hierarchical relationships with other vendor locations and one person may be the contact for several locations within a single company. In this case, it would be expected that the lower level locations would have a parent location and the contact would be connected to the highest appropriate location. This implies that the person can act for the highest level and all lower levels.

If a vendor provides consultants or contractors, those people are not considered as vendor contacts but would be considered as part of a generalized workforce model. In a sole proprietorship, the vendor contact may be the same person who provides the service; in this case, the person would be a vendor contact and would also exist in any future workforce model.

Contact Authorization

Vendor Location Contact Authorization defines which Vendor contacts are allowed to access electronic information about the vendor location and represent the vendor location in specific business transactions. It is intended to both allow access to electronic functions and allow users to verify authority of signers of paper documents.

It is expected that this entity will be extended to be part of a more robust application access control process.

Addresses and Address usage

Addresses are considered as separate from any vendor and vendor locations are linked to addresses for specific purposes. If a company moves, the old address record will remain and the company will be linked to a new address record. That new address record, theoretically, may already exist if another vendor had previously operated out of that location.

A vendor location may have a physical address where the building is located. It may also have a PO Box where it receives mail and a third address where customers ship returned goods.

Address Usage answers the question "For a given vendor location and purpose, to whom do we send communication and how." The VLIN defines the vendor location; the usage code defines the purpose; contact ID defines the who; and the how is defined by the method of notification code. The method of notification code can point to the contact entity or the address entity. Within Address usage, for each function (usage), one address must be designated as primary. This will be the address used to send official paper documents. Other addresses can and should receive the information by FAX or email. Email address and FAX number are in the contact record

When sending a letter through the postal system, the components come from the following entities:

Name	from Contact
Internal mail delivery information	from Address Usage
Delivery Line Supplemental Text	from Address
Delivery Line	from Address
City, State and Postal Code	from Address

Internal mail delivery information would be something like mail stop, floor or private box. Since that information is outside the U.S. Postal Service's jurisdiction, it is not part of the civil address and is not carried in the address record.

The USPS has a service which will validate addresses and return additional data from its database. Some of the data elements in the address record assume this process has taken place and the additional data has been kept. At the time specific processes are designed, a decision will need to be made about those elements.

The standard supports international addresses by providing extra lines defined for this purpose. This version of the model assumes that no validation or formatting will be performed on any international address but the user will enter the address as it needs to be formatted. The Postal Code attribute allows eight characters to simultaneously 1) fit the longest known international address and 2) discourage developers from putting the last four digits of Zip+4 into the postal code field.

For US addresses, the last four digits of the Zip+4 should go in the designated attribute.

Licensing and Certification

Generally, licenses are issued by governmental bodies and authorize a person or company to perform defined functions. The governmental body can be federal, state, county or city. This standard only includes licenses which are held by vendors directly. Consider a construction firm which holds construction licenses and has staff who are licensed architects. This vendor model would include the licenses held by the company but not those held by individuals. In the case of a sole proprietorship, the individual's licenses could be included. However, these might be more appropriately included as part of a workforce model.

It is anticipated that implementation will only support a limited subset of possible licenses – those of interest to the COV contracting process.

Certifications officially affirm some fact which is relevant to the purchasing process. The purchasing process only cares about certifications issued by Virginia. The only ones currently known relate to

SWAM or DBE. An out of state vendor may be certified by its home state, but it will still need to get a Virginia certification.

A vendor location can have multiple certifications and multiple licenses.

Service Area and Commodity

Most vendor locations only do business in part of the state. The Service Area entity uses FIPS codes to record where the vendor does business. Additionally, each vendor only offers specific types of goods or services. The Commodity entity uses NGIP commodity codes to record what type of goods and services a vendor offers.

When the Commonwealth sends out a solicitation for bid, the process can use these two tables to send the solicitation to a targeted audience: those vendors who offer the service desired and do business in the area desired. This targeted approach serves vendors because they do not receive “junk” solicitations and serves the Commonwealth because it can do more effective research, save postage for solicitations and reduce paper consumption.

Note that it is possible that a company does business in several areas but only offers a particular service in one of the areas. Because of this, a vendor may still receive a solicitation for that commodity in an area he does not service. A vendor may define itself as offering services in an area when it only services part of the area. This may also result in the vendor receiving solicitations it cannot respond to. Creating a system to maintain the combination of commodities and service areas for each vendor was deemed impractical.

Tax Profile and Tax Withholding

A business may have many locations but each location will have only one tax ID at any given time. If a vendor location obtains additional tax IDs, a new vendor location will be created for each tax ID. If a Vendor changes tax IDs, the new one will be recorded and the old one will be part of the history.

Payment Methods

All vendors can be paid by check, so all vendors will have at least one pay method. However, alternate payment methods may be set up. Within certain fiscal constraints, a pay card can be used if the vendor accepts it. If a vendor accepts electronic payment, an EDI payment method can be set up.

Codes Tables

Generally, code tables are not shown in this model. It is assumed that code tables will be used to define allowed lists of values for code attributes but are not included in the model since they would obscure the primary business relationships and meaning. In some situations, however, additional data is needed beyond a simple list of codes and their meanings. For these cases, a code table has been included to represent the additional data requirement.

Implications of the Model

1. External systems shall be able to look up vendors using an alternate identifier.
2. External systems shall have a mechanism to obtain the Virginia Vendor Location Identification Number.
3. Vendors will be responsible to remove authorized access when a representative leaves the company.

4. When a person changes an address, the system will not update the address but will 1) break the link to the existing address record, 2) look for an existing address record with the new address and link to it if it exists and 3) create a new address record and link to it if the new address does not exist.

Answers to Anticipated Questions

1. If a person represents several vendors, how are orders and payments handled?
A. An independent representative may sell products for several companies. Each of the companies should be entered as a separate vendor and the representative would have a contact record for each one. His phone and email might be the same for all of them but he would be in the system multiple times. Purchase orders would be placed with each company as needed and each company would send the COV an invoice.
2. What about a situation where several doctors have a practice, the COV places orders with individual doctors but the payment always goes to the practice?
A. Each doctor would be a separate vendor location with the practice as the parent. The Tax Profile for the practice would be linked to the practice and each doctor so that all doctors would have the same tax ID. Each doctor would have a Payment Method linked to the Tax Profile for the practice and the Pay-To Name would be the name from the W8 for the practice. When the check is written, it might contain a memo which would mention the name of the doctor.